REMARKS

Claims 1, 3, 5-6, 8-9 and 11-22 are pending and have been amended. Claims 2, 4, 7 and 10 have been canceled without prejudice to or disclaimer of the subject matter contained therein. Objections have been made to claims 5, 12, 13, 20-22. Claims 1-4, 6-11, 14-19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over admitted prior art and Konuma (US 6437503). Claims 5, 12-13 and 20-22 have been rejected under 35 U.S.C. §103(a) as being unpatentable over admitted prior art, Konuma (US 6437503) and JP 6-150836.

Claim Objections

Claims 5, 12, 13, 20-22 have been objected to on the ground that it is allegedly not clear whether Applicants claim the shape of emitter. Claims 5, 12, 13, 20-22 have been amended according to the Examiner's suggestion and recite "...CNT emitters have a half-circle or crescent **shape**." Applicants would like to thank the Examiner for the suggestion and respectfully request that the objection to claims 5, 12, 13, 20-22 be withdrawn.

Claim Rejections – 35 USC §103(a)

Claims 1-4, 6-11, 14-19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over admitted prior art and Konuma (US 6437503).

At page 3 of the Office Action, the Office asserts that Konuma discloses an elongated slot shaped gate electrode opening for obtaining an oblong potential lens and thus emission widening characteristics. Applicants respectfully traverse.

Konuma discloses elongated **rectangular** slot shaped gate electrode openings (FIG. 20). Also, the through holes have the same rectangular geometry as the gate electrode openings and each emitter is formed like a strip along the longitudinal direction of the rectangular gate holes, where the combination of these geometrical shapes yields an **oblong beam spot**. (*See*, Col. 15, lines 24-28.) In contrast, the electrons deflected by the **elongated-oval shaped gate hole[s]** (exemplary embodiments shown in FIGS. 5-8 and 11A-12 of the present application) form an **asymmetrically elongated beam spot** for example, as illustrated in FIG. 10.

In addition to the difference in geometrical shapes of the beam spots, the rectangular slot shaped gate electrode disclosed by Konuma has different emission widening characteristics than the elongated-oval shaped gate hole of the present invention. The longitudinal axis of the oblong beam spot is parallel to the longitudinal axis of the rectangular gate hole. In contrast, the longitudinal axis of the diamond shaped beam spot, as depicted in FIG. 10 of the present application, is normal to the longitudinal axis of the elongated-oval shaped gate hole.

Claims 1, 6 and 14 have been amended to incorporate the geometrical shapes of the through holes and gate holes. Amended claim 1 recites:

> 1. A field emission device, comprising:
> ...a gate insulating layer having one or more through holes..., each of the **through holes having a generally circular cylindrical shape**...; and
> a gate electrode **having an elongated-oval shaped gate hole...**
> whereby the electrons emitted by each of the CNT emitters make **an asymmetrically elongated beam spot.**
> (Emphasis added.)

Claim 6 has been amended to recite:

> 6. A field emission device, comprising:
> ... a plurality of parallel gate electrodes which... have **elongated-oval shaped gate holes...**;
> ... a gate insulating layer ... having through holes..., the **through holes... having a generally circular cylindrical shape,**
> whereby the electrons emitted by each of the CNT emitters make **an asymmetrically elongated beam spot.**
> (Emphasis added.)

Claim 14 has been amended to recite:

> 14. A field emission device, comprising:
> ... a first gate insulating layer... **having first through holes that... have a generally circular cylindrical shape;**
> ... a second gate electrode ... has **elongated-oval shaped** second **gate holes....**
> (Emphasis added.)

there is no finding that would teach or motive the ordinary skill in the art to provide crescent shaped emitter as taught by JP reference in the device of Konuma for obtaining the emission characteristics of the present invention. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Based on the reasons as set forth above, Applicants respectfully request allowance of all the pending claims, including claims 1, 3, 5-6, 8-9 and 11-22.

In the event that there are any questions concerning this paper, or the application in general, the Examiner is respectfully urged to telephone Applicants' undersigned representative so that prosecution of the application may be expedited.

Respectfully submitted,

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